

WHAT IS CLAIMED IS:

1. A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

5 a delay profile calculating section for calculating a delay profile using a reception signal; and

a finger path allocating section for allocating path positions to said plurality of fingers on the basis of the delay profile calculated by said delay profile calculating section,

wherein a delay profile calculation cycle in said delay profile calculating section is variable.

2. A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

a delay profile calculating section for calculating a delay profile using a reception signal;

a finger path allocating section for allocating path positions to said plurality of fingers on the basis of the delay profile calculated by said delay profile calculating section;

a reception characteristic detecting section for detecting reception characteristics of the reception signal; and

25 a delay profile calculation control section for con-

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trolling a delay profile calculation cycle in said delay profile calculating section on the basis of the reception characteristics detected by said reception characteristic detecting section.

5 3. An apparatus according to claim 2, wherein said reception characteristic detecting section detects a reception BER.

10 4. An apparatus according to claim 2, wherein said reception characteristic detecting section detects a reception SIR.

15 5. An apparatus according to claim 2, wherein said delay profile calculation control section stops delay profile calculation processing in said delay profile calculating section when the reception characteristics detected by said reception characteristic detecting section are good.

20 6. An apparatus according to claim 2, wherein said delay profile calculation control section stops delay profile calculation processing in said delay profile calculating section for a predetermined period of time in accordance with a predetermined threshold when the reception characteristics detected by said reception characteristic detecting section are good as compared with the predetermined threshold.

25 7. An apparatus according to claim 5, wherein the

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delay profile calculation processing is stopped by interrupting an operation clock supplied to the delay profile calculation processing in said delay profile calculating section.

5 8. An apparatus according to claim 6, wherein the delay profile calculation processing is stopped by interrupting an operation clock supplied to the delay profile calculation processing in said delay profile calculating section.

10 9. An apparatus according to 5, wherein said delay profile calculating section comprises a holding section, and while the delay profile calculation processing is stopped, said holding section keeps outputting a delay profile calculated immediately before the delay profile
15 calculation processing is stopped.

 10. An apparatus according to 6, wherein said delay profile calculating section comprises a holding section, and while the delay profile calculation processing is stopped, said holding section keeps outputting a delay
20 profile calculated immediately before the delay profile calculation processing is stopped.

 11. An apparatus according to claim 2, wherein said delay profile calculating section calculates an average delay profile by averaging values obtained by performing
25 delay profile calculation by a predetermined number of

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times, said finger path allocating section allocates path positions to said plurality of fingers on the basis of the average delay profile, and said delay profile calculation control section controls the number of times of calculations in said delay profile calculating section on the basis of the reception characteristics detected by said reception characteristic detecting section.

12. An apparatus according to claim 5, wherein said delay profile calculating section calculates an average delay profile by averaging values obtained by performing delay profile calculation by a predetermined number of times, said finger path allocating section allocates path positions to said plurality of fingers on the basis of the average delay profile, and said delay profile calculation control section controls the number of times of calculations in said delay profile calculating section on the basis of the reception characteristics detected by said reception characteristic detecting section.

13. An apparatus according to claim 11, wherein said delay profile calculation control section decreases the number of times of calculations in said delay profile calculating section when the reception characteristics detected by said reception characteristic detecting section improve, and increases the number of times of calculations in said delay profile calculating section when the recep-

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tion characteristics deteriorate.

14. A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

5 a delay profile calculating section for calculating a delay profile using a reception signal;

a finger path allocating section for allocating path positions to said plurality of fingers on the basis of the delay profile calculated by said delay profile calculating
10 section;

a reception characteristic detecting section for detecting reception characteristics of the reception signal; and

a delay profile calculation control section for controlling an in-phase addition count in delay profile calculation in said delay profile calculating section on the basis of the reception characteristics detected by said
15 reception characteristic detecting section.

15. An apparatus according to claim 14, wherein said
20 delay profile calculation control section decreases an in-phase addition count in said delay profile calculating section when the reception characteristics detected by said reception characteristic detecting section are good.

16. An apparatus according to claim 14, wherein said
25 delay profile calculation control section sets an in-phase

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addition count in said delay profile calculating section to a predetermined count in accordance with a predetermined threshold when the reception characteristics detected by said reception characteristic detecting section are good as compared with the predetermined threshold.

17. A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

a delay profile calculating section for calculating a delay profile;

a finger path allocating section for operating said fingers on the basis of the delay profile generated by said delay profile calculating section;

a rake reception section for combining despreading results output from said plurality of fingers;

a reception data processing section for demodulating an output from said rake reception section and outputting resultant digital data as a demodulated output signal;

a known data table in which known data to be contained in a reception signal is stored in advance;

a threshold table in which a threshold associated with an error rate of a reception signal is stored in advance;

a reception data comparing section for obtaining an error rate of the reception signal by comparing known data

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contained in an output signal from said reception data processing section with the known data stored in said known data table, and outputting a signal in accordance with a result of comparison between the error rate and the
5 threshold stored in said threshold table; and

a delay profile calculation control section for outputting a control signal for controlling operation of said delay profile calculating section on the basis of an output from said reception data comparing section.

10 ~~18.~~ A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

a delay profile calculating section for calculating a delay profile;

15 a finger path allocating section for operating said fingers on the basis of the delay profile generated by said delay profile calculating section;

a rake reception section for combining despreading results output from said plurality of fingers, outputting
20 the resultant data, and estimating and outputting a reception SIR;

a threshold table in which a threshold associated with a reception SIR is stored in advance;

a reception data comparing section for outputting a
25 signal corresponding to a result of comparison between the

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reception SIR from said rake reception section and the threshold stored in said threshold table; and

a delay profile calculation control section for outputting a control signal for controlling operation of said delay profile calculating section on the basis of an output from said reception data comparing section.

~~19.~~ A radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception;

10 wherein reception quality is ensured and power consumption is reduced by controlling a delay profile calculation cycle for obtaining path positions allocated to said fingers on the basis of reception characteristics.

~~20.~~ A power consumption control method for a radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

the step of receiving a radio signal;

20 the step of calculating a reception characteristic value of the radio signal;

the step of comparing the reception characteristic value with a predetermined threshold;

the step of stopping delay profile calculation processing when a result of the comparison in the comparison step indicates that the reception characteristic value is

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larger than the predetermined threshold;

the step of executing the delay profile calculation processing when the result of the comparison in the comparison step indicates that the reception characteristic value is smaller than the predetermined threshold;

the step of allocating path positions to the plurality of fingers on the basis of the delay profile calculated in the execution step; and

the step of despreading the radio signal by using said plurality of fingers.

21. A method according to claim 20, further comprising:

the step of detecting whether a predetermined period of time elapses while the delay profile calculation processing is stopped in the stop step; and

the step of resuming the delay profile calculation processing when a lapse of the predetermined period of time is detected in the detection step.

22. A power consumption control method for a radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

the step of receiving a radio signal;

the step of calculating a reception characteristic value of the radio signal;

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the first comparison step of comparing the reception characteristic value with a first predetermined threshold;

the step of executing delay profile calculation processing when a result of the comparison in the first comparison step indicates that the reception characteristic value is smaller than the first predetermined threshold;

the second comparison step of comparing the reception characteristic value with a second predetermined threshold when the result of the comparison in the first comparison step indicates that the reception characteristic value is larger than the first predetermined threshold;

the first stop step of stopping delay profile calculation processing for a first predetermined period of time when a result of comparison in the second comparison step indicates that the reception characteristic value is larger than the second threshold;

the second stop step of stopping delay profile calculation processing for a second predetermined period of time when the result of comparison in the second comparison step indicates that the reception characteristic value is smaller than the second threshold;

the step of allocating path positions to the plurality of fingers on the basis of the delay profile calculated in the execution step; and

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the step of despreading the radio signal by using said plurality of fingers.

23. A power consumption control method for a radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake reception, comprising:

the step of receiving a radio signal;

the step of calculating a reception characteristic value of the radio signal;

10 the step of comparing the reception characteristic value with a predetermined threshold;

the step of decreasing the number of times of calculations in obtaining an average delay profile when a result of the comparison in the comparison step indicates
15 that the reception characteristic value is larger than the predetermined threshold;

the step of allocating path positions to the plurality of fingers on the basis of the average delay profile; and

20 the step of despreading the radio signal by using said plurality of fingers.

24. A power consumption control method for a radio communication apparatus which is used in a CDMA communication system, has a plurality of fingers, and performs rake
25 reception, comprising:

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the step of receiving a radio signal;

the step of calculating a reception characteristic value of the radio signal;

the step of comparing the reception characteristic value with a predetermined threshold;

the step of decreasing an in-phase addition count in calculating a delay profile when a result of the comparison in the comparison step indicates that the reception characteristic value is larger than the predetermined threshold;

the step of allocating path positions to the plurality of fingers on the basis of the average delay profile; and

the step of despredading the radio signal by using said plurality of fingers.

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